

Method for Transfer of Personalised Information

Background of the Invention

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The invention relates to protection of personalised information in a handportable phone in order to avoid this data becoming lost.

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During recent years it has become widely used to integrate applications into cellular phones allowing the user to personalize his phone. There is a trend saying that the phones will become even more personalised in the future and therefor there is a clear need for protecting this data.

Summary of the Invention

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According to a first aspect of the invention there is provided a method for transferring personalised information from a first hand portable phone having a first memory means for storing said personalised information to a second hand portable phone having a second memory means for storing said personalised information. The method includes establishing a connection between said first hand portable phone and a computer on which a data transfer application is running, controlling the data transfer application on said computer to read said personalised information from said first memory means for storing said personalised information in said first handportable phone to memory means associated with said data transfer application in said computer, establishing a connection between said second handportable phone and said computer on which said data transfer application is running, and controlling the data transfer application on said computer to write said personalised information from said memory means associated with said data transfer application to said second memory means for storing said personalised information in said second handportable phone. When the user

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changes his phone, he is according to the invention able to read the personalised information stored in the old phone into a computer, preferably a PC, and then write the personalised information from the computer into his new phone. The computer readable program code means allows the user to
5 individually select the type of personalised information to be written into said memory means prior to the initialising of the data transfer. Here it will be much easier to change phones or to have more than one phone.

According to the preferred embodiment of the invention the personalised
10 information includes phonebook content, message content, profile setting, phone and call settings and service settings. The established connection between the computer and said first and second phone is according to the preferred embodiment of the invention a wire-based data connection.

15 Preferably, the data transfer application evaluates the second phones capabilities to receive said personalised information prior to a transfer of the personalised information to the second phone, adapts, when needed, said personalised information so it fits with the second phones capabilities to receive said personalised information, and transfers said adapted
20 personalised information the second phone.

According to a second aspect of the invention there is provided a method of making a back-up of personalised information stored in a hand portable phone having memory means for storing said personalised information,
25 comprising steps of establishing a connection between said hand portable phone and a computer on which a data transfer application is running, and controlling the data transfer application on said computer to read said personalised information from said memory means for storing said personalised information in said hand portable phone to memory means
30 associated with said data transfer application in said computer. The computer readable program code means allows the user to individually select the type of personalised information to be read from said memory means prior to the

initialising of the data transfer. Hereby the user has a possibility for storing a back-up version of the personalised information in his phone. The user stores the personalised information in a continuous process during the lifetime of the phone. Therefore it is very useful for the user to have the possibility to save the personalised information in a back up version.

According to a third aspect of the invention there is provided a computer program product for transferring personalised information from one phone to another, and comprising a computer useable medium having computer readable program code means embodied therein. The computer readable program code means in the computer program product comprises computer readable program code means for establishing a connection between said first hand portable phone and a computer on which a data transfer application is running, computer readable program code means for controlling the data transfer application on the computer to read said personalised information from said first memory means for storing said personalised information in said first hand portable phone to memory means associated with said data transfer application in the computer, computer readable program code means for establishing a connection between said second hand portable phone and the computer on which said data transfer application is running, and computer readable program code means for controlling the data transfer application on said computer to write said personalised information from said memory means associated with said data transfer application to said second memory means for storing said personalised information in said second hand portable phone. said computer readable program code means allows the user to individually select the type of personalised information to be written into said memory means prior to the initialising of the data transfer. The computer program product will preferably be distributed on a CD-ROM or via the Internet.

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According to a third aspect of the invention there is provided a computer program product for making a back-up of personalised information stored in a

hand portable phone, and comprising a computer useable medium having computer readable program code means embodied therein. The computer readable program code means in the computer program product comprising computer readable program code means for establishing a connection
 5 between said hand portable phone and a computer on which a data transfer application is running, and computer readable program code means for controlling the data transfer application on said computer to read said personalised information from said memory means for storing said personalised information in said hand portable phone to memory means
 10 associated with said data transfer application in said computer. The computer program product will preferably be distributed on a CD-ROM or via the Internet.

The application for transferring personalized information allows the user to
 15 back up all data to a PC and restore it again. This feature is useful corporate tool to build similar functionality and with the same updated information to all corporate phones. The pre-set functions such as, WAP Bookmarks, the entire Company Phone Directory and even with company logo can be stored to the phone memory to be used as header for personalized messaging.

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Brief Description of the Drawing

For a better understanding of the present invention and to understand how the same may be brought into effect reference will now be made, by way of
 25 example only, to accompanying drawings, in which:-

Fig. 1 illustrates in perspective a handportable phone.

Fig. 2 schematically shows the essential parts of a telephone for
 30 communication with a cellular network.

Fig. 3 shows a phone connected to a computer having an application for transferring personal information between the phone and the computer according to the preferred embodiment of the invention.

- 5 Fig. 4 shows how the user controls the application for transferring personal information between a phone and a computer according to the preferred embodiment of the invention.

- 10 Fig. 5 shows the user interface of the application according to the preferred embodiment of the invention.

Fig 6 shows a "read from phone" dialog box in the application according to the preferred embodiment of the invention.

- 15 Fig 7 shows a "write to phone" dialog box in the application according to the preferred embodiment of the invention.

Fig. 8 illustrates the principle of requests and responses in the application according to the preferred embodiment of the invention.

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Detailed Description of Invention

- Fig. 1 shows a preferred embodiment of a phone according to the invention, and it will be seen that the phone, which is generally designated by 1, comprises a user interface having a keypad 2, a display 3, an on/off button 4, a speaker 5, and a microphone 6 (openings present in the bottom of the phone and therefore not visible in the present view). The phone 1 according to the preferred embodiment is adapted for communication via a cellular network, e.g. the GSM 900/1800 MHz network.

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According to the preferred embodiment the keypad 2 has a first group 7 of keys as alphanumeric keys, two soft keys 8, two call handling keys 9, and a cursor navigation key 10. The present functionality of the soft keys 8 is shown in separate fields in the display 3 just above the keys 8, and the call handling keys 9 are used for establishing a call or a conference call, terminating a call or rejecting an incoming call.

Fig. 2 schematically shows the most important parts of a preferred embodiment of the phone, said parts being essential to the understanding of the invention. The processor 18 controls the communication with the network via the transmitter/receiver circuit 19 and an internal antenna 20.

The microphone 6 transforms the user's speech into analogue signals, the analogue signals formed thereby are A/D converted in an A/D converter (not shown) before the speech is encoded in a digital signal processing unit 14 (DSP). The encoded speech signal is transferred to the processor 18, which i.a. supports the GSM terminal software. The processor 18 also forms the interface to the peripheral units of the apparatus, including a RAM memory 17a and a Flash ROM memory 17b, a SIM card 16, the display 3 and the keypad 2 (as well as data, power supply, etc.). The digital signal-processing unit 14 speech-decodes the signal, which is transferred from the processor 18 to the earpiece 5 via a D/A converter (not shown).

Fig. 3 shows how the phone 1 according to the preferred embodiment of the invention is connected to a computer 21, e.g. a personal computer (PC), via a data cable 22, e.g. a DLR-3 (a Nokia accessory). The data cable is connected between one of the serial ports on the computer 21 and FBUS connector on the phone 1. Alternatively a wireless connection based on e.g. the Bluetooth protocol may be used for the data transfer.

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Fig. 4 shows how the user according to the preferred embodiment of the invention may control the application for transferring personal information

between phone 1 and the computer 21. Via the user interface of the computer 21 (mouse, keyboard and display) the user, when he has started the application, may select "help", "about", "select communication port", "exit", "read data", "write data" and "end". When "read data" or "write data" is selected data is transferred via the serial communication link 21.

The implementation of software application according to the preferred embodiment of the invention enables the data transfer of personalised information from one mobile phone to another. In the following part of this document the software requirements for the software application that enables the data transfer of personalised information from one handportable phone to another is defined.

Terms, Acronyms and Abbreviations

- FBUS Fast asynchronous serial bus used in Nokia phones launched in 1998 and later, such as Nokia 6110 and Nokia 7110.
- IrDA Infrared Data Association, known from e.g. Nokia 7110.
- ISI Intelligent Service Interface, known from e.g. Nokia 7110.
- ISA Intelligent Software Architecture, known from e.g. Nokia 7110.
- ME Mobile Equipment e.g. a mobile phone.
- SCM Short Code Memory; phone book, known from e.g. Nokia 7110.

Data transfer bus requirements

The requirements for data transfer bus are presented in table 1.

Property	Value
Communication port (PC)	Serial port (mandatory); IR port (optional)
Communication port (phone)	FBUS
Data transfer protocol	ISI and FBUS
Data transfer cable	DLR-3

Table 1

A list of information to be transferred from/to the phone is presented in table 2.

PHONEBOOK	Entry (both ME and SIM)	Mandatory
	Settings	Mandatory
	Caller groups	Mandatory
	Speed dials	Mandatory
MESSAGES	Inbox	Mandatory
	Outbox	Mandatory
	Archive	Mandatory
	Templates	Mandatory
	User defined folders	Mandatory
	Message settings	Mandatory
CALL REGISTER	Missed calls	Optional
	Dialled numbers	Optional
	Received calls	Optional
	Call duration / last call duration	Optional
	Call duration / dialled calls' duration	Optional
	Call duration / received call's duration	Optional
	Call duration / all calls' duration	Optional
	Call cost / last call cost	Optional
	Call cost / All calls' units	Optional
PROFILES	Personalise / Alert	Mandatory
	Personalise / Incoming call alert	Mandatory
	Personalise / ringing tone	Mandatory
	Personalise / ringing volume	Mandatory
	Personalise / vibrating alert	Mandatory
	Personalise / message alert tone	Mandatory
	Personalise / keypad tones	Mandatory
	Personalise / warning tones	Mandatory
SETTINGS	Alarm clock	Mandatory
	Clock	Mandatory
	Call settings / own number sending	Mandatory
	Call settings / anykey answer	Mandatory
	Call settings / automatic redial	Mandatory
	Call settings / speed dialling	Mandatory
	Call settings / call waiting	Mandatory
	Call settings / line for outgoing calls	Mandatory
	Call settings / summary after call	Mandatory
	Call settings / fax or data call	Mandatory
	Phone settings / language	Mandatory
	Phone settings / cell info display	Mandatory
	Phone settings / welcome note	Mandatory
	Phone settings / network selection	Mandatory

	Phone settings / confirm SIM service actions	Mandatory
	Communication settings / info service	Mandatory
	Communication settings / voice mailbox number	Mandatory
	Security settings / PIN code request	Mandatory
	Security settings / outgoing calls	Mandatory
	Security settings / international calls	Mandatory
	Security settings / international calls except to home country	Mandatory
	Security settings / incoming calls	Mandatory
	Security settings / incoming calls when abroad	Mandatory
	Security settings / cancel all barrings	Mandatory
	Security settings / fixed dialling	Mandatory
	Security settings / closed user group	Mandatory
	Security settings / security level	Mandatory
	Security settings / security code	Optional
	Security settings / PIN code	Optional
	Security settings / PIN2 code	Optional
	Security settings / barring password	Optional
CALL DIVERT	Call divert	Mandatory
GAMES	Games / High score data	Optional
	Games / Level	Optional
	Games / Sounds	Optional
	Games / Lights	Optional
CALENDAR	Notes	Mandatory
	Settings	Mandatory
SERVICES (WML BROWSER)	Settings	Mandatory

Table 2.

The requirements to the PC hardware are listed in table 3

Parameter	Value	Necessity
Processor	>= Pentium 133 MHz	Mandatory
RAM	>= 32 MB	Mandatory
Free hard disk space	>= 20 MB	Mandatory
External data interface	Serial port (RS-232)	Mandatory
External data interface	IR (IrDA compatible)	Optional
Operating system	Windows 95/98/NT 4.0 (with SP 3 or later)	Mandatory

5 Table 3.

In practice the above values are just nominal because there are no special requirements (i.e. special graphics card) and the most important factor is that the selected operating system generally works smoothly in the PC.

- 5 According to the preferred embodiment the phone has to support the following protocols: ISI, and FBUS and the phone has to have the following connections to the PC: DLR-3/FBUS and IR/IrDA.

10 The data read/write is according to the preferred embodiment of the invention to be made through a single serial port. In case the hardware provides several serial ports only one is used according to the preferred embodiment of the invention. However for supporting future expansions it is recommended to design application in the way that allows the use of multiple serial ports.

15 Usability

According to the preferred embodiment of the invention the application for controlling the transfer of personal data from a mobile phone to a PC is controlled from the PC shown in fig. 3. The same applies when data is stored in the phone from the PC. The users are assumed to have a basic knowledge of the Windows® operating system and they know how to use a mobile phone, e.g. having a UI style known from the Nokia 6110.

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The user interface of the application is presented in fig. 5. The user will see this window when the application is started. The main interface includes a tool bar, which contains buttons for "Read from phone", "Write to phone" and "Help". There also exists a menu bar, which contains the following structure:

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1. File
 - (a) Read from phone
 - (b) Write to phone
 - (c) Exit
 2. Settings
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- (a) Connection...
- 3. Help
 - (a) Contents
 - (b) About...

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Read from phone

When user has selected "Read from phone" either from menu bar (File / Read from phone) or toolbar, a dialog box will pop up as shown in fig. 6. The properties (or items) to be read are listed in a check box list. The items that have been read are checked. The progress bar at the bottom of the dialog indicates the current reading operation. It always start from zero (or from the left side) and ends at the maximum state (or to the right side). The Start button starts the reading sequence and alternatively the cancel button exits from the dialog. Dialog is automatically closed when all properties are read successfully.

Write to phone

When user has selected "Write to phone" either from menu bar (File / Write to phone) or tool bar there will pop up a dialog as presented in fig. 7. The properties (or items) to be written are in a check box list. The items that have been written are checked. The progress bar at the bottom of the dialog indicates the current writing operation. It always start from zero (or from the left side) and ends to the maximum state (or to the right side). The Start button starts the writing sequence and alternatively the cancel button exits from the dialog. Dialog is automatically closed when all properties are written successfully.

When user has selected "Exit" from menu bar (File / Exit) an "Exit" message dialog box (not shown) will pop up asking the user to confirm this operation and indicating that data will be lost if this is the case. If user selects the button, "Yes", for confirmation, the application is closed. Alternatively button "No" closes only the message dialog and the application is not terminated.

When user has selected "Connection..." from menu bar (Settings / Connection...) a "connection dialog box will pop up (not shown). Available serial ports are read from the registry of Windows and listed in a combo box. From combo box the user can select the serial port to be used for serial communication with the phone. A button, "Test", informs the user whether the phone is connected via selected serial port or not. A button, "OK", also performs the same connection test as button, "Test", but not in case the serial port is already tested. The button, "OK" always closes the dialog in spite of the validity of serial connection.

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"About" from menu bar (Help /About...) and "Help" either from menu bar (Help /Contents) or from tool bar works as any other Windows® application. When problems occur during the execution of the application, the application checks what has caused the problem and displays an error message.

15 Examples a

Function	Error	Error message
Read data from phone	Received data is invalid	Invalid data.
Read data from phone	Serial communication does not work	Serial communication error. Make sure the phone is connected to the serial port with DLR-3 serial cable and check out that the right serial port is active (from menu Settings/ Connection).
Write data to phone	Received data is invalid	Error while sending data to phone.
Write data to phone	Serial communication does not work	Serial communication error. Make sure the phone is connected to the serial port with DLR-3 serial cable and check out that the right serial port is active (from menu Settings/ Connection).
Selection of the serial port	Serial communication does not work	Serial communication error. Make sure the phone is connected to the serial port with DLR-3 serial cable.

Table 4.

Requests and responses

20 The requests for reading data from the ISI servers are stored in ASCII files REQx.txt, where x = server ID. All reading requests are not included in the files while in the case of data lists (i.e. phonebook entries or calendar notes) the requests are generated from the responses (only the first request is

included in the file). The writing requests are generated from the responses of reading requests. In some cases there is only need to change the message id, while the data remains same. In some cases some data must also be removed while responses may have some additional information that is not
 5 needed in writing requests. The principle of Requests and responses is presented in fig.8

Virtual servers

The information read and/or written from/to phone is grouped as phonebook, calendar, clock etc. In practice the actual message handling in the phone is
 10 based on same kind of grouping. There are several ISI servers like phonebook, calendar, clock etc. However there are also some specific cases like T9, which is based on special message type.

15 In order to make the relation between user interface and actual serial communication functions simple, there are used a principle of virtual servers are used. It means that in user interface the information can be grouped as it is most convenient for the user and the implementation of serial communication functions is based on these same groups.

20 As most of the communication messages are created during the operation the communication functions are based also on these data groups. The main reason is not the data grouping but the different structures of messages. Some request/response pairs use similar data blocks, but in some cases
 25 there are specific differences that must be handled by special cases.

The use of a virtual server makes it possible to define also messages of T9 as these would be real ISI messages of "T9 ISI server".

30 According to the preferred embodiment of the invention the application for transferring personal information when it starts reading the personal information to be transferred sends successive read requests to the phone.

This e.g. starts with a request for reading the first phonebook record. The phone then replies by transferring the content of the first record to the PC application that stores this record on the hard disk of the PC. Each record may include several data fields, such as name, phone number, mobile
5 number, private number, fax number, local number, E-mail address. This continues until all phonebook records are read. If a record is empty there is no need for storing the full empty record on the hard disk, and therefor the application sets a flag indicating that this record is empty and when the personal information later on is transferred to another phone this empty
10 record will not become part of the transfer.

Hereafter the application reads and stores the message content, profile settings, the phone and call settings on the hard disk of the PC. Furthermore the application reads and stores the WML Browser service settings. This is
15 very useful since the WAP settings are operator dependent. Furthermore the call register may be read and stored in the same way if the user requests this.

Basically the application according to the preferred embodiment of the invention may be used as a back up application, too. Hereby the personal
20 information is pasted into the same phone as it was originally copied from.

According to an alternative embodiment of the invention the application for transferring personal information also requests the reading of the content of the Calendar of the phone, voice tags stored in association with phonebook
25 records for voice dialling, executable operations in the menu structure of the phone for voice control of the menu etc.

According to the preferred embodiment of the invention the application for transferring personal information. It starts by sending a request to the
30 receiving phone for writing data into a first data field of a first phonebook record. The phone processor gives a reply including a confirmation or rejection of the presence of this record. Furthermore the reply includes

information about the data fields and their size. Then the application evaluates the data in relation to the received information. If minor adaptations of data is needed, e.g. truncation of a name label is required this is done.

5 Then the data that fits into the data fields of the phone is transferred to the receiving phone. This continues until all phonebook records are transferred. The application does not evaluate records for which a flag indicating that this record is empty is set. However if the phonebook of the receiving phone is too small the application will store data in records for which a flag indicating that this record is empty is set, too.

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Hereafter the application writes the message content, profile settings, the phone and call settings, and WML Browser service settings, call register (optional) into the receiving phone. The writing may include the content of the Calendar of the phone, voice tags stored in association with phonebook

15 records for voice dialling, executable operations in the menu structure of the phone for voice control of the menu etc.

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According to a further alternative embodiment of the invention the connection set up between the phone and the computer is a secure WAP session and the session is controlled from the phone. The computer on which the application for transferring personal information is executed is placed at e.g. the operator in order to ensure the user a back up of his transferred personal information.